Call for Research Proposals

Title: Addressing Scaled Quail Declines in Texas.

Contact: Robert Perez (robert.perez@tpwd.state.tx.us)

INTRODUCTION

According to the North American Breeding Bird Survey, since 1966 the rate of decline per year for scaled quail (*Callipepla squamata*) in the Tamualipan Brushlands and the Central Mixed Grass Prairies has been 4.2% and 7.0% respectively. Texas Parks and Wildlife Department (TPWD) has conducted an August roadside quail index since 1978 in 7 of the 10 ecological regions in Texas. TPWD data indicate the Rolling Plains ecoregion has experienced significant declines since 1987 and the South Texas ecoregion since 2001. The reason/s for these declines are unknown but likely include landscape level changes in habitat. In order to halt and potentially reverse these trends, the TPWD and conservation partners need a better understanding of specific limiting factors.

SCALED QUAIL CONSERVATION CHALLENGES

Loss of Habitat

There is a long list of factors that are often blamed for the demise of scaled quail including predators, fire ants, feral hogs and disease. However, the majority of quail biologists agree that the fundamental cause of scaled quail declines has been a landscape level loss of the quantity and quality of suitable habitat. Entire regions of Texas have been drastically altered by fire suppression, changes in agricultural practices, exotic vegetation and habitat fragmentation. These changes occurred slowly over the past century resulting in an overall loss of habitat. TPWD biologists hypothesize that the most significant factor influencing quail populations in the Rolling Plains and South Texas ecoregions is habitat fragmentation related to exotic/invasive vegetation and the alteration of native woody plant communities.

Habitat Fragmentation

Fragmentation has been defined as the conversion of large areas of contiguous native habitats to other types of vegetation and/or land use, leaving remnant patches of native vegetation that vary in size and degree of isolation. Brush control practices, improper grazing, exotic vegetation and the division of rural lands into smaller parcels have all likely contributed to habitat fragmentation for this species. When fragments of habitat become small and isolated, scaled quail may become locally extirpated with no source of birds to re-establish a population.

Exotic Plant Species Increases

Over the last several decades, many types of exotic forage grasses have been developed and introduced across the state. Unfortunately, the majority of these species offer little habitat value for scaled quail and other ground nesting birds. For example, Old World bluestems in the Rolling Plains and buffelgrass and guinea grass in South Texas have become far more common in rangelands. These grass species tend to form monocultures and can even invade shallow soils preferred by scaled quail, potentially reducing the amount of suitable habitat.

Woody Plant Community Changes

The presence of a native and diverse woody plant community is associated with scaled quail habitat. Over time, much of the historic scaled quail range in the Rolling Plains and South Texas has undergone drastic changes in both the extent and diversity of woody plant communities.

These changes may have negatively impacted habitat suitability for scaled quail. A better understanding of how woody plant communities have changed where scaled quail have undergone recent declines and where populations appear stable is needed for conservation planning and management.

Justification Related to Division Priorities

The determination of limiting factors for scaled quail populations is identified as a research priority in the Upland Game Bird Strategic Plan.

PROJECT OBJECTIVES

This research should focus on habitat assessment and habitat use where scaled quail are currently successful (stable populations) compared to areas where current densities are low (declining population) but were previously successful (stable) within the past 10 years in the Rolling Plains and/or South Texas ecoregions (Gould et. al. 1960).

Specific objectives include:

1. Conducting a geospatial assessment of woody vegetation patterns through time (1980 – 2015) for at least two study sites per ecoregion supporting stable populations of scaled quail and for at least two sites per ecoregion with declining populations. Sites should be greater than 2000 hectares each.
    a. where and if historical spatial data exists to support a gross assessment, conduct exploratory analyses of herbaceous ground cover in addition to woody vegetation,
2. Using radio telemetry and/or pinpoint Global Positioning System (GPS) at a minimum of two sites per ecoregion, assess population demographics relative to native versus exotic herbaceous cover including:
    a. Habitat patch size,
    b. Habitat use by season,
    c. Home ranges, and
    d. Reproductive effort and success,
3. Using radio telemetry and/or pinpoint GPS at a minimum of two sites per ecoregion, assess population demographics relative to woody vegetative patterns including:
    a. Habitat patch size,
    b. Habitat use by season,
    c. Home ranges, and
    d. Reproductive effort and success.

Historic geospatial data analyses may be used to compare changes in woody plant communities and herbaceous ground cover across study sites. Additionally, a spatial analysis may be completed for the current vegetative communities (2016-2017) across sites that includes estimates of bare ground, exotic vegetation, woody canopy diversity, density and structure and the interspersion of vegetation types. The scale, patch size and connectivity (travel corridors) of quail habitat may also be considered in both the historic and current analyses. Population demographic data may be collected using radio telemetry and/or pinpoint GPS. Sites may be located in either or both ecoregions. TPWD can assist in locating sites and providing historic roadside quail index data.

For objectives #2 and #3 more credit will be given to those proposals that address at least 3 different study areas in each ecoregion. However, the estimated TPWD project cost should not exceed $500K unless there are exceptional or documented design reasons.